

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 22, 2008 has been entered.
2. Claims 1-4 and have been amended, claims 12-14 are canceled and Claims 1-11 and 15 are pending.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 9 and 10 recites” **storing the extracted edges**”. The “**storing the extracted edges** ” lacks proper antecedent basis in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. Claims 9 and 10 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (claim 9: lines 5: **storing the extracted edges** in a recording medium and claim 10: lines 5: **storing the extracted edges** in a recording medium). The disclosure supports extracting edges from a frame for spatial and motion masking operation (See applicant's disclosure [0009] and [0010]). Using extracted edges in the masking operation is not the same as deliberately storing the extracted images on the recordable medium.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is directed to "A **spatial masking** method **for use** in watermarking a moving picture.." However, body of the claim lacks a positively recited active step of any **masking operation** let alone reciting an intended "**spatial masking**" step.

Claim 10 is directed to "A **motion masking** method **for use** in watermarking a moving.." However, body of the claim lacks a positively recited active step of any **masking operation** let alone reciting an intended "**motion masking**" step.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 11 recites “A **recording medium** for storing computer programs for executing the method of claim ...”. However, the applicant has **not provided an explicit and deliberate** (i.e. limiting) definition for “**recording medium**” in the specification or limiting claim language. Claim 11 would be directed to an appropriate Manufacture within the meaning of 101 if the medium would only reasonably be interpreted by one of ordinary skill in the art as covering embodiments which are **articles produced from raw or prepared materials and which are structurally and functionally interconnect to the program in such a manner as to enable the program to act as a computer component and realize its functionally**. The “**recording medium**” in claim 11 would suggest to one of ordinary skill signals or other forms of propagation and transmission media, typewritten or handwritten text on paper, or other items failing to be an appropriate manufacturer under 35 USC 101 in the **context of computer-related inventions**. Therefore, Claim 11 is rejected under 101 as failing to be limited to embodiments which fall within a statutory category.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-5, 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hannigan et al. (hereinafter referred to as Hannigan, US Pat No.: 6,535,617) in view of Gu et al (hereinafter referred to as Gu, US Pat. No.: 7006568).

As per claims 1 and 11:

Hannigan disclose a moving image watermarking method using a human visual system, and A computer readable medium including program codes executable by a computer to perform a moving image watermarking method using a human visual system, comprising:

- a) obtaining a watermark value by exclusive-ORing a random key value and a binary value of a logo image (Column 15: lines 13-30; Spread spectrum modulation);
- b) separately performing a plurality of masking operations (column 10: lines 60-67; column 11: lines 1-15)
- d) obtaining a watermarked frame value by adding a watermark value weighted by the global masking value and a control variable to an original frame value (figure 8: 810; global gain; 3.4: Gain control and Perceptual Analysis; column 17: lines 26-38.); and

e) inserting a watermark into a moving image frame using the watermarked frame value
(column 8: lines 2-15; 2.1: Image Water Embedder; 3.0: Embedder
Implementation; column 14: lines 37-55);

Hannigan does not explicitly teach obtaining a global masking value through the separate masking operations, and performing a motion masking operation. Gu, in an analogous art teaches obtaining a global masking value through the separate masking operations, and performing a motion masking operation (column 6: lines 5-16; column 7: lines 2-15, column 11: lines 29-66). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method disclosed by Hannigan to include obtaining a global masking value through the separate masking operations, and performing a motion masking operation. This modification would have been obvious because a person having ordinary skill in the art would have been motivated by the desire to provide a secure system that effectively meets the need to provide high quality images while making efficient use of limited bandwidths as suggested by Gu in (column 2: lines 3-15).

As per claim 2:

Gu discloses a watermarking method, comprising performing a spatial masking operation (column 5: lines 60-67).

As per claim 3:

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Hannigan discloses a watermarking method, comprising extracting edges from the contrast-adjusted frame (column 19: lines 50-63). Hannigan does not explicitly teach performing the spatial masking operation comprises the steps of: adjusting contrast of the moving image frame. Gu, in an analogous art discloses a watermarking method, comprising performing the spatial masking operation comprises the steps of: adjusting contrast of the moving image frame; and (column 6: lines 18-25).

As per claim 4:

Hannigan discloses a watermarking method, comprising extracting edges from the contrast-adjusted frame (column 19: lines 50-63). Hannigan does not explicitly teach performing the spatial masking operation comprises the steps of: adjusting contrast of the moving image frame. Gu, in an analogous art discloses a watermarking method, comprising performing the spatial masking operation comprises the steps of: adjusting contrast of the moving image frame; and (column 6: lines 18-25).

As per claim 5:

Gu discloses a watermarking method, comprises the step of performing a frequency masking operation (column 7: lines 5-16).

As per claim 8:

Hannigan disclose a watermarking method extracting the watermark, comprising the steps of: subtracting the watermarked frame value from an original frame value to obtain a

subtracted result value; and exclusive-ORing the subtracted result value and a random variable obtained by a key value, and obtaining an exclusive-ORed result (Column 15: lines 13-30; Spread spectrum modulation).

As per claim 11:

Hannigan disclose a recording medium for storing computer programs for executing the method of claim 1 in a format readable by computer (Figure 20).

12. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraft (US Pat No.: 6, 954, 549) in view of Hannigan et al. (hereinafter referred to as Hannigan, US Pat No.: 6,535,617).

As per claim 9:

Kraft discloses a spatial masking method for use in watermarking a moving picture comprising the steps of: adjusting contrast of an image frame; and extracting edges from the contrast-adjusted frame and storing the extracted edges in a recording medium (column 2: lines 6-15).

Kraft does not explicitly teach the frame is a moving image and a special masking and inserting a watermark in portions of the contrast-adjusted frame from which the edges were extracted frame. Hannigan, in an analogous art however teaches the frame is a moving image and a special masking (column 11: lines 20-65; 2.2 overview of a detector and reader) and inserting a watermark in portions of the contrast-adjusted frame from which the edges were

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extracted frame (column 19: lines 50-63). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method disclosed by Kraft to include the frame is a moving image and a special masking and inserting a watermark in portions of the contrast-adjusted frame from which the edges were extracted frame. This modification would have been obvious because a person having ordinary skill in the art would have been motivated by the desire to provide a method of removing fixed pattern noise from a media signal as suggested by Hannigan in (column 1: lines 50-61).

As per claim 10:

Kraft discloses motion masking method for use in watermarking a moving picture comprising the steps of: obtaining a luminance difference between a current frame and a previous frame; and extracting edges from the current frame and storing the extracted edges in a recording medium (column 2: lines 6-15)

Kraft does not explicitly teach a motion masking and inserting a watermark in portions of the current frame from which the edges were extracted. Hannigan, in an analogous art however teaches teach a motion masking (column 11: lines 20-65; 2.2 overview of a detector and reader) and inserting a watermark in portions of the current frame from which the edges were extracted(column 19: lines 50-63). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method disclosed by Kraft to include teach a motion masking and inserting a watermark in portions of the current frame from which the edges were extracted. This modification would have been

obvious because a person having ordinary skill in the art would have been motivated by the desire to provide a method of removing fixed pattern noise from a media signal as suggested by Hannigan in (column 1: lines 50-61).

Allowable Subject Matter

13. The indicated allowability of claims 2-5 and 14 are withdrawn in view of the newly discovered reference(s) to Gu et al (US Pat. No.: 7006568) Rejections based on the newly cited reference(s) above.

14. Claims 6-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim(s) 6-7 and 15 include the following feature of a method which are not taught or further suggested and would not have been obvious over prior arts of record if rewritten in independent form including with features as indicated below and with all of the limitations of the base claim and any intervening claims: comparing an image quality of the watermarked frame with an image quality set to a target; and decreasing the control variable by a predetermined value if the image quality of the frame is less than the target image quality, and increasing the control variable by a predetermined value if the image quality of the frame is greater than the target image quality; wherein the image quality is estimated on the basis of Peak-Signal-to-Noise Ratio (PSNR); and a plurality of the masking operations are separately performed on identical moving image data.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the notice of reference cited in form PTO-892 for additional prior art

Contact Information

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Techane J. Gergiso whose telephone number is (571) 272-3784. The examiner can normally be reached on 9:00am - 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/T. J. G./

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